MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) COMPLIANCE INSPECTION

CITY OF LANCASTER
LANCASTER COUNTY, PENNSYLVANIA

REPORT DATE:
May 12, 2011

CONDUCTED:
September 1–2, 2010

Conducted for:
U.S. Environmental Protection Agency
Office of Compliance and Enforcement
1200 Pennsylvania Avenue, NW
Washington, DC 20460

and

U.S. Environmental Protection Agency, Region 3
Water Protection Division
Office of NPDES Enforcement (3WP42)
1650 Arch Street
Philadelphia, PA 19103

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Section 1.0 Introduction

On September 1–2, 2010, the U.S. Environmental Protection Agency (EPA), Region 3, and an EPA contractor, PG Environmental, LLC (hereafter, collectively, the EPA Inspection Team) conducted an inspection of the City of Lancaster's (hereafter, City or Permittee) Municipal Separate Storm Sewer System (MS4) Program. Discharges from the City's MS4 are regulated under the *National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems*, Permit No. PAG-13 (hereafter, the Permit), issued in December 2002. The City received coverage under the Permit and was issued Permit No. PAG-133577 in February 2004, and it has been developing its MS4 Program since that time. The Permit has been administratively extending to June 11, 2012.

The City encompasses approximately 7.4 square miles (4,736 acres) of land with approximately 0.01 square miles (6.4 acres) of surface water area. The City is in Lancaster County, Pennsylvania, about 70 miles west of Philadelphia, Pennsylvania. The total population of the City was estimated to be 55,381 people at the time of the 2000 U.S. Census. The City is located within the Little Conestoga Creek and Conestoga River watersheds.

The Permit authorizes the City to discharge stormwater runoff and certain non-stormwater discharges from its small MS4 to surface waters of the Commonwealth of Pennsylvania. Part A of the Permit, *Stormwater Management Program*, requires the City, within the permit term, to implement a stormwater management program approved by the Commonwealth of Pennsylvania, Department of Environmental Protection (DEP). DEP has developed an *MS4 Stormwater Management Program Protocol* (hereafter, the Protocol), which describes an approved stormwater management program that includes best management practices (BMPs), a compliance schedule, and measureable goals to comply with the six Minimum Control Measures (MCMs) specified in Part A of the Permit. To the extent that a Permit applicant adopts all or a portion of the Protocol, it becomes a part of the applicant's Authorization to Discharge and the requirements associated with the applicant's coverage under the Permit.

The City's MS4 Annual Reports for 2008–2009 and 2009–2010 state that the City has implemented the Protocol in its entirety; in other words, the City has adopted the entire Protocol as its Stormwater Management Program (SWMP).

The purpose of the inspection was to obtain information that will assist EPA in assessing the City's compliance with the requirements of the Permit and associated Protocol, as well as the implementation status of the City's current MS4 Program. The inspection schedule is presented in Appendix A hereto, and copies of the Permit and Protocol are included in Appendix D and Appendix E, respectively.

The EPA Inspection Team obtained its information through a series of interviews with representatives from the City's Department of Public Works and the Bureau of Planning,

along with a series of site visits, record reviews, and field verification activities. The primary representatives involved in the inspection were the following:

City of Lancaster MS4 Program Compliance Inspection: September 1–2, 2010	
City of Lancaster, Department of Public Works	Charlotte Katzenmayer, Director Rob Ruth, Deputy Director Bryan Harner, Wastewater Project Manager Jim Csoka, Labor Supervisor Douglas Connell, Utilities Supervisor
City of Lancaster, Bureau of Planning	Craig Lenhard, Senior Planner
EPA Representatives	Andy Dinsmore, EPA Region 3 Rebecca Crane, EPA Region 3
EPA Contractors	Bobby Jacobsen, PG Environmental, LLC Scott Coulson, PG Environmental, LLC

Dry weather conditions were experienced throughout the inspection activities on September 1–2, 2010. Weather history reports[1] indicate that no precipitation had fallen in the City during the week that preceded the inspection.

[1] Weather history reports for City of Lancaster, Pennsylvania, were obtained from the Weather Underground website (http://www.wunderground.com).

Section 2.0 Information Obtained Regarding Compliance with the Permit and Protocol

During the evaluation, the EPA Inspection Team obtained documentation and other supporting evidence regarding compliance with the Permit and Protocol. Pertinent information obtained during the evaluation is presented in this inspection report as inspection observations. The presentation of inspection observations in this report does not constitute a formal compliance determination or notice of violation. Referenced documentation used as supporting evidence is provided in Appendix B, and photo documentation is provided in Appendix C.

Section 2.1 Illicit Discharge Detection and Elimination

Part A of the Permit requires the City to implement and enforce a program to detect and eliminate illicit discharges into the MS4.

The following are the summary components of the Illicit Discharge Detection and Elimination MCM (IDD&E MCM) from the Protocol:

- Develop map of municipal separate storm sewer system outfalls and receiving surface waterbodies;
- Prohibit illicit discharges via DEP-approved ordinance;
- Implement an IDD&E Program that includes 1) field screening program and procedures and 2) elimination of illicit discharges;
- Conduct public awareness and reporting program (see also the Public Education and Outreach portion of this manual).

2.1.1. The City had not developed a complete storm sewer system map. The Protocol for the IDD&E MCM requires the Permittee to "develop [a] map of [the] municipal separate storm sewer system outfalls and receiving surface waterbodies….show the location of all outfalls and the names and locations of all surface waters that receive discharges from those outfalls." In addition, the Protocol for the IDD&E MCM requires the City to "devise an internal coding system for . . . outfalls that [the Permittee] can use on [its] system map."

The EPA Inspection Team formally requested an "Onsite demonstration of storm drain system mapping tools (see Appendix B, Exhibit 1, Item No. 20). In response, the City provided the EPA Inspection Team with a hard-copy of the *City of Lancaster Sewer Districts and MS4 Outfalls Map* (hereafter, City Storm Drain System Map). The City Storm Drain System Map is maintained in electronic format in a geographic information system (GIS) database. The City's consultant, CDM, developed the GIS database on the basis of information from existing schematics of the combined sewer and separate storm sewers, as well as limited recent global positioning system (GPS) data. City staff stated that ground-truthing exercises had been conducted and that they had high confidence in the accuracy of the map.

The City Storm Drain System Map includes the locations of surface waterbodies and the locations and name of outfalls from the MS4. It also displays the areas of the City that have combined sewer systems and those which are served by the MS4. According to City staff, the City's sewer system is approximately 45 percent separate and 55 percent combined when assessed by sewer length. About 15 percent of the City's population is served by the MS4, whereas about 85 percent is served by the combined system. The City's mapping system has separate GIS layers for the combined and separate sewer systems.

During the inspection, the EPA Inspection Team noted that the City had not included all of its MS4 outfalls on the City Storm Drain System Map. Specifically, the EPA Inspection Team identified an outfall at the City's Conestoga Water Treatment Facility that was not depicted on the City's map. As described by the facility representative, stormwater from the Conestoga Water Treatment Facility flows to a retention basin in the northern portion of the site, which discharges to an adjacent grassy area. The discharged water then flows across the ground surface and discharges to the Conestoga River about 150 feet to the northwest. City staff stated that the outfall from the MS4 to the Conestoga River at the Conestoga Water Treatment Facility will be added to the City Storm Drain System Map (see Section 2.3.1 and Appendix C, Photographs 28, 29 and 30, for additional details).

Subsequent to the inspection, the EPA Inspection Team conducted a review of several of the City's Annual Reports. The City's 2008–2009 Annual Report stated that there were 18 outfalls in the MS4, and the City's 2009–2010 Annual Report stated that there were 19 outfalls. Since the submission of those Annual Reports, the City has identified and screened 10 additional outfalls, which have been added to the City Storm Drain System Map. As described above, City staff indicated that the outfall at the City's Conestoga Water Treatment Facility will be added to the City Storm Drain System Map and will also be included in the City's total number of outfalls from the MS4.

2.1.2. The City had not identified the source of dry-weather flow identified during recent field screening activities. The Protocol for the IDD&E MCM requires that the Permittee "have a list of priority areas in the system for efforts to trace the sources and eliminate illicit and illegal discharges and a procedure for program evaluation and assessment." The Protocol further requires that "every outfall in the Priority Areas must be screened two times a year as each priority area is screened" and that the source of the illicit discharge must be identified to "remove or correct the illicit discharge."

The EPA Inspection Team formally requested "Records of Priority List outfall inspections/dry-weather field screening and monitoring (March 10, 2009 to current)" (see Appendix B, Exhibit 1, Item No. 23). In response, the City provided records of dry-weather screening activities for priority list outfalls from its MS4. Examples of dry-weather screening activity documentation are provided in Appendix B, Exhibit 2. The City had documented its dry-weather field screening activities with the DEP-provided *Illicit Discharge Field Screening Program, Data Collection Form*.

City staff recently observed and documented dry-weather flow from Outfall 027 near the intersection of Hershey Avenue & Walbank Avenue during a dry-weather screening activity on August 25, 2010 (see Appendix B, Exhibit 3). Sampling and analysis of the flow revealed fecal coliform levels (16,000 MPN/100 mL). City staff stated that if fecal coliform levels detected in a dry-weather flow are greater than 200 MPN/mL the readings would be considered "high" and the City would conduct follow-up activities to determine the source of the pollutants; however, the City does not have written standard operating procedures (SOPs) for conducting dry-weather screening activities or sampling and analysis protocols for observed dry-weather flows. At the time of the inspection on September 1–2, 2010, the City had not yet conducted follow-up activities to identify the source of the high levels of fecal coliform in the observed dry-weather flow.

The high levels of fecal coliform identified in the City's outfall exceed those considered to be protective for recreational use. According to the Commonwealth of Pennsylvania Code, *Chapter 93, Water Quality Standards, § 93.7, Specific Water Quality Criteria*, for surface waters used for contact sports,

> During the swimming season (May 1 through September 30), the maximum fecal coliform level shall be a geometric mean of 200 per 100 milliliters (ml) based on a minimum of five consecutive samples each sample collected on different days during a 30-day period. No more than 10% of the total samples taken during a 30-day period may exceed 400 per 100 ml. For the remainder of the year, the maximum fecal coliform level shall be a geometric mean of 2,000 per 100 milliliters (ml) based on a minimum of five consecutive samples collected on different days during a 30-day period.

2.1.3. The City had not maintained an inventory **of** reported incidents **and efforts at tracking illicit connections/illicit discharges (IC/IDs).**The EPA Inspection Team formally requested an "Inventory – reported incidents of illicit discharges/connections/ spills and resolution (March 10, 2009 to current)" (see Appendix B, Exhibit 1, Item No. 24); however, the City did not provide the requested documents.

City staff explained that they do not maintain an inventory of reported incidents of illicit discharges/connections/spills,. Also, according to the City's Wastewater Project Manager and Senior Planner, the City does not document or maintain information regarding citizen complaints and the corrective actions or responses taken by the City.

According to City staff and the City's 2009–2010 Annual Report, the City has not identified or received any complaints regarding illicit discharges to the MS4 during the 2009–2010 reporting period, and the City currently does not have a specific hotline, phone number, or website established for the reporting of IC/IDs. As described by City staff, citizens may call the main phone number listed on the City's website to report a complaint, which will then be referred to the appropriate personnel. There were, however, no written SOPs for receiving, documenting, and responding to citizen complaints.

City staff explained that the City is exploring the development of an Internet-based complaint submission platform for citizens to report complaints, which will automatically

generate an email notification to the appropriate personnel. The City intends for the system to be integrated into a computerized maintenance management system (CMMS), which the City plans to implement within the next year. The City could use the CMMS as a tool to enhance its capabilities for documenting and tracking complaints, as well as generating work orders to ensure that the complaints are adequately addressed.

Section 2.2 Construction Site Runoff Control

Part A of the Permit requires the City to implement and enforce a program to reduce pollution in any stormwater runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre, including projects of less than one acre that are part of a larger common plan of development or sale that equals one acre or more.

The following are the summary components of the Construction Site Runoff Control MCM (Construction MCM) from the Protocol:

- Enact, implement and enforce a stormwater control ordinance using DEP model language;
- Require review and approval of Erosion and Sediment Control Plans: (1) for any earth disturbance one acre or more causing runoff to the MS4 (or any earth disturbance five acres or more regardless of the planned runoff), and (2) as a prerequisite for the formal approval of land development and redevelopment plans or the issuance of building permits; and
- Distribute educational materials to land developers with the applications for building permits and other land development/redevelopment permits or approvals (see Public Education and Outreach Minimum Control Measure).

Through a Memorandum of Understanding (MOU) with the Lancaster County Conservation District (hereafter, CCD or District), the City relies on the CCD to implement the construction oversight program to satisfy the requirements of the Construction Stormwater Runoff Management MCM outlined in the Protocol. The relationship between the City and CCD is further discussed in Sections 2.2.3 and 2.2.4 herein.

2.2.1. Construction site visit. On September 2, 2010, the EPA Inspection Team conducted a site visit at a publicly-owned construction site within the jurisdictional boundaries of the City's MS4. The purpose of the site visit was to document the City's oversight activities for construction sites. Summary observations are presented below. All referenced photographs are contained in Appendix C, Photograph Log.

Public Site: Lafayette Elementary School – 1000 Saint Joseph Street, Lancaster, PA 17603

This project, which is being performed by/on behalf of the School District of Lancaster, consists of a school expansion and associated improvements. At the time of the

inspection, the site had been graded, vertical construction was apparent, and active concrete work was observed. According to an agreement between the landowner and the City, *Storm Water Management Facilities and Best Management Practices Operations and Maintenance Agreement* (May 12, 2009), two infiltration trenches and a detention basin will serve as post-construction BMPs at the site. The EPA Inspection Team observed the following with regard to construction stormwater controls at the facility:

- The site operator indicated that the most recent inspection by the CCD had been conducted in May 2010. The site operator was not aware of the need to conduct weekly and post-storm event inspections.
- The slopes of the detention/infiltration basins located northeast of the bus loop were not stabilized (see Appendix C, Photograph 1).
- BMPs for concrete waste had not been implemented at a concrete washout area located east of the Fremont Street construction entrance. The inspectors observed concrete wash water being actively released onto the ground surface, and concrete residues had flowed toward the Fremont Street construction entrance and near the southwest perimeter of the site (see Appendix C, Photographs 2 through 5).
- BMPs for concrete waste had not been implemented at a second concrete washout area located northeast of the construction trailers. The inspectors observed concrete waste and wash water residue on the ground surface, and also saw that concrete residues had flowed into a swale that leads to Temporary Sediment Basin B at the southern corner of the site, which will eventually serve as a post-construction BMP (see Appendix C, Photographs 6 and 7).

2.2.2. The City does not maintain a complete inventory of active construction sites that are potential pollutant sources to the MS4. The EPA Inspection Team formally requested an "Inventory of current active construction sites with location (differentiating municipally sponsored from private projects)" (see Appendix B, Exhibit 1, Item No. 10). In response, the City provided a list of "Applications and Approvals" issued by the City's Planning Bureau and Commission for 2008, 2009, and 2010 for construction projects within the jurisdictional limits of the City (see Appendix B, Exhibit 4).

According to City staff, the Applications and Approvals list is updated monthly; however, it does not depict the status of the construction projects (e.g., active, inactive). The City also provided a list of active construction sites that is maintained by the CCD (see Appendix B, Exhibit 5); however, it does not delineate which construction sites discharge to the combined sewer or to the separate storm sewer system .

Based on the two lists provided to the EPA Inspection Team, it appears that the City could cross-reference the lists to generate a more concise and accurate list of active construction projects within the MS4.

2.2.3. The City does not track erosion and sediment (E&S) control plan review and approval prior to issuance of land development approvals. The Protocol for the Construction MCM states the Permittee must "use municipal [City] resources, a service provider, or the local CCD to review Erosion and Sediment (E&S) Control Plans." On March 9, 2010, the City and CCD entered into an MOU which delineates the

responsibilities of each party, including those pertaining to erosion and sediment pollution control (see Appendix B, Exhibit 6). Under the MOU, the CCD is required to perform certain tasks, including E&S control plan reviews and construction site inspections. The MOU clearly stipulates that the City is to require evidence that E&S control plans have been reviewed by the CCD and that the applicable projects have been issued NPDES permits. The established working relationship between the City and CCD is further discussed in Section 2.2.4 herein.

According to City staff, the City has been ensuring that E&S control plans have been reviewed by the CCD; however, the City does not have a structured mechanism for tracking E&S control plan review and approval by the local CCD prior to issuance of City land development approvals (e.g., building permits). During the inspection, the City provided the EPA Inspection Team with a draft template developed by the City to be used in the Microsoft Project software program for tracking permit application, plan reviews, and approval (see Appendix B, Exhibit 7). City staff indicated that the City has been reviewing the content of the template to be implemented at a later date, though the City did not specify a date of implementation. Subsequent to the inspection, the EPA Inspection Team reviewed the draft template and notified the City that the template does not indicate whether a project has obtained an NPDES permit from the CCD, if applicable.

2.2.4. Observations related to coordination between the City and the local CCD regarding construction site inspection and complaints. The MOU specifies that the City must "forward complaints to the District, or advise others to forward complaints related to water pollution that is resulting from accelerated soil erosion, animal waste, or the land application of biosolids as deemed appropriate by the municipality." The MOU further specifies that the District will "perform on-site investigations in response to complaints regarding accelerated soil erosion and sediment pollution for any and all earth disturbance activities including agricultural plowing and tilling and provide the municipality with copies of the correspondence" (see Appendix B, Exhibit 8).

The EPA Inspection Team formally requested "Records of follow up action to citizen/employee complaints regarding construction site issues (March 10, 2009 to current)" (see Appendix B, Exhibit 1, Item No. 12), but the City did not provide the requested records. City staff explained that the City does not maintain records of citizen complaints or subsequent referrals to the District by the City for construction site issues/complaints identified through public (i.e., third-party) complaints.
Nor does the City track resulting actions (e.g., enforcement) taken by the District to ensure that all complaints have been adequately addressed by the District.

Section 2.3 Post-Construction Stormwater Management in New Development and Redevelopment

Part A of the Permit requires the City to implement and enforce a program to reduce pollution in any stormwater runoff to the MS4 from new development and redevelopment projects that result in a land disturbance of greater than or equal to one acre, including

projects of less than one acre that are part of a larger common plan of development or sale that equals one acre or more.

The following are the summary components of the Post-Construction Stormwater Management MCM (Post-Construction MCM) from the Protocol:

- Enact, implement and enforce a stormwater control ordinance using DEP model language;
- Coordinate the review and approval of post-construction BMPs simultaneously with the review and approval for construction Erosion and Sediment Control Plans as described in the Construction Minimum Control Measure; and
- Ensure long-term operation and maintenance of the BMPs.

2.3.1. Post-construction site visits. On September 2, 2010, the EPA Inspection Team conducted site visits at three privately-owned facilities and one publicly-owned facility within the jurisdictional boundaries of the City's MS4. The purpose of the site visits was to document the City's oversight activities for ensuring long-term operation and maintenance of post-construction BMPs. Summary observations pertaining to the sites are presented below. All referenced photographs are contained in Appendix C, Photograph Log.

Private Site: Armstrong Flooring Distribution Facility – Southwest Corner of Dillerville Road and Manheim Pike, Lancaster, PA 17601

The Armstrong Flooring Facility consists of a 200,000 square-foot building that was expanded by approximately 37,000 square feet in 2005 (see Appendix C, Photograph 8). According to the City Storm Drain System Map, the facility is within the MS4 urbanized area that is regulated under the Permit. The EPA Inspection Team observed the following with regard to post-construction stormwater controls at the facility:

- A detention basin was installed to the north of the building addition. The detention basin receives stormwater runoff from the roof of the building and a grassy area in the northern portion of the facility. According to the City Senior Planner, stormwater discharged from the basin flows to the northwest and ultimately discharges to an unnamed tributary to Little Conestoga Creek. The detention basin appeared to have been recently mowed (see Appendix C, Photograph 9); however, vegetative cover had not been established around the detention basin outlet structure and erosion was present (see Appendix C, Photograph 10).
- The detention basin post-construction BMP was not identified on the list of post-construction BMPs included in the City's 2009–2010 MS4 Annual Report (see Appendix B, Exhibit 9).
- The operation and maintenance agreement for post-construction controls at the facility does not specify that the landowner must conduct inspections of the facilities at a set frequency. During the inspection, the EPA Inspection Team did not request documentation of any inspections that may have been conducted by the landowner.

Private Site: Lowe's Development Site – 1801 Hempstead Road, Lancaster, PA 17601
The Lowe's Development Site consists of a Lowe's retail store and the associated impervious parking lot area. According to City staff, construction at the site was completed at some point during 2009. The City Storm Drain System Map indicates that the facility is within the MS4 urbanized area that is regulated under the Permit. The EPA Inspection Team observed the following with regard to post-construction stormwater controls at the facility:

- A drainage swale (see Appendix C, Photograph 11) and detention basin (see Appendix C, Photograph 12) were installed along the southwestern edge of the site. The drainage swale receives stormwater flow from the adjacent roadway and impervious parking lot area, which then flows to the detention basin. The detention basin also receives flow directly from storm drain inlets in the impervious parking lot area.
- The drainage swale appeared to have been recently mowed (see Appendix C, Photograph 11); however, vegetative cover had not been fully established around the drainage swale outlet structure to the detention basin and erosion was present (see Appendix C, Photograph 13). In addition, debris was observed on the grate covering of the outlet structure pipe (see Appendix C, Photograph 14).
- The detention basin appeared to have been recently mowed (see Appendix C, Photograph 12).
- A mulch stockpile was present on the impervious surface upgradient and adjacent to two storm drain inlets that flow directly to the detention basin (see Appendix C, Photographs 15, 16 and 17).
- The operations and maintenance agreement for post-construction controls at the facility specifies that the landowner will conduct inspections at a "minimum of four times annually and after major storm events." The EPA Inspection Team did not request documentation of the inspections during the inspection.
- The drainage swale post-construction BMP was not identified on the list of post-construction BMPs included in the City's 2009–2010 MS4 Annual Report (see Appendix B, Exhibit 9), though the detention basin BMP was identified on the City's list.

Private Site: Lancaster Leaf Facility – 207 & 209 Pitney Road, Lancaster, PA 17601
The Lancaster Leaf Facility is a tobacco product manufacturing facility that comprises several buildings and impervious parking areas for cars and trucks. The facility recently underwent an expansion for additional building and parking space.

The City Storm Drain System Map indicates that the facility is within the MS4 urbanized area that is regulated under the Permit. The EPA Inspection Team observed the following with regard to post-construction stormwater controls at the facility:

- A constructed wetland infiltration basin (see Appendix C, Photograph 18) and a constructed wetland detention basin (see Appendix C, Photograph 19) were installed along the northwestern edge of the site. Flows from the infiltration basin are designed to enter the detention basin prior to discharge off-site. The constructed wetland areas receive stormwater flow from the adjacent buildings and impervious parking lot area.

- The drainage swale inlet structure to the constructed wetland detention basin appeared to have been recently mowed (see Appendix C, Photograph 20); however, vegetative cover had not been fully established around the inlet structure to the detention basin (see Appendix C, Photograph 21).
- The area surrounding the constructed wetland infiltration basin appeared to have been recently mowed (see Appendix C, Photograph 18); however, vegetative cover had not been fully established around the inlet structure to the infiltration basin and erosion was present (see Appendix C, Photographs 22 and 23).
- A gravel vehicle access pad had been installed in the constructed wetland detention basin (see Appendix C, Photograph 24), apparently to allow access to a newly constructed billboard adjacent to the detention basin (see Appendix C, Photographs 19 and 25). City staff explained that the City had not approved the installation of the gravel vehicle access pad.
- Concrete washout waste was observed near the billboard pole adjacent to the detention basin (see Appendix C, Photographs 25, 26 and 27).
- The operation and maintenance agreement for post-construction controls at the facility specifies that the landowner will conduct inspections on a monthly basis and after storm events. The EPA Inspection Team did not request documentation of the inspections during the inspection.
- The constructed wetland infiltration basin and detention basin were not identified in detail on the list of post-construction BMPs included in the City's 2009–2010 MS4 Annual Report (see Appendix B, Exhibit 9). Specifically, the City's list only notes that there is an "infiltration basin" at the facility.

Public Site: Conestoga Water Treatment Facility – 150 Pitney Road, Lancaster, PA 17106

The Conestoga Water Treatment Facility, which is owned and operated by the City draws water from the adjacent Conestoga River for treatment and distribution. The facility was originally built in the 1930s and has recently undergone construction for a significant upgrade to membrane filtration treatment. The facility consists of several buildings and open-air tanks. The EPA Inspection Team observed the following with regard to post-construction stormwater controls at the facility:

- A retention basin was installed in the northern portion of the site (see Appendix C, Photographs 28 and 29). The retention basin discharges to an adjacent grassy area (see Appendix C, Photograph 30), and the discharge flows across the ground surface to the Conestoga River, about 150 feet to the northwest.
- The retention basin post-construction BMP was not identified on the list of post-construction BMPs included in the City's 2009–2010 MS4 Annual Report(see Appendix B, Exhibit 9), and the discharge location from the MS4 to the Conestoga River in this area was not displayed on the City Storm Drain System Map (see Section 2.1.1 for additional details).

2.3.2. The City did not maintain a complete inventory of post-construction BMPs in its jurisdiction as a component of the MS4 program. The EPA Inspection Team formally requested an "Inventory of post-construction BMPs with location (differentiating municipally owned and privately- owned)" (see Appendix B, Exhibit 1,

Item No. 17). In response, the City referenced a list of structural BMPs included on page 28 of the City's 2009–2010 Annual Report (see Appendix B, Exhibit 9), which noted the existence of 10 structural stormwater BMPs at 7 sites within the City. City staff explained that the list included in the 2009–2010 Annual Report was generated based on active operation and maintenance agreements with private landowners. Operation and maintenance agreements for post-construction stormwater controls are further discussed in Section 2.3.4 herein.

During the inspection, the EPA Inspection Team noted the existence of several additional post-construction BMPs within the City limits that were not included on the list provided by the City (see Section 2.3.1, Post-Construction Site Visits, for additional details). Specifically, the following post-construction stormwater controls were not included on the City's list and were observed during the inspection:

1. Detention basin at the Armstrong Flooring Distribution Facility (see Appendix C, Photograph 9)
2. Drainage swale at the Lowe's Development Site (see Appendix C, Photograph 11)
3. Retention basin at the City's Conestoga Water Treatment Facility (see Appendix C, Photograph 28).

In addition, the City's list of post-construction stormwater controls did not provide details of the post-construction BMPs implemented at the Lancaster Leaf Facility. Specifically, the list only noted that there was an "infiltration basin" at the facility; however, the post-construction controls at the facility consist of a constructed wetland infiltration basin, a constructed wetland detention basin, and a drainage swale inlet structure to the detention basin (see Appendix C, Photographs 18, 19 and 20).

2.3.3. The City did not track post-construction BMP plan review and approval to ensure conformance with its Stormwater Ordinance. The Protocol for the Post-Construction MCM requires the Permittee to "enact, implement, and enforce a stormwater control ordinance using DEP model language." Through City Ordinance No. 11-2001, the City adopted Chapter 260, *Stormwater Management*, of the City Code on December 11, 2001 (hereafter, Stormwater Ordinance), and amended the Stormwater Ordinance on December 14, 2004 through City Ordinance No. 23-2004. As required by Article IV, *Drainage Plan Requirements*, of the City's Stormwater Ordinance (see Appendix B, Exhibit 10), the City must provide approval of Drainage Plans (which include information regarding post-construction BMPs) prior to plan approval, the issuance of building permits, and/or the onset of earth-disturbing activity.

As explained by City staff, the City Engineer and Senior Planner conduct plan reviews and issue approvals/disapprovals, including the evaluation of the plans for post-construction stormwater controls. Though the City relies on the CCD to implement the construction oversight program to satisfy the requirements of the Construction Stormwater Runoff Management MCM outlined in the Protocol, the City does not rely on the CCD to conduct post-construction control plan review or approval.

According to City staff, the City does not use a formal written checklist or similar tool to document the plan review process and ensure that post-construction BMP requirements

are reviewed prior to approval and the onset of construction activity. The City did, however, provide the EPA Inspection Team with a draft template developed by the City to be used in the Microsoft Project software program for tracking permit application and plan reviews and approval (see Appendix B, Exhibit 7). As described in Section 2.2.3, City staff indicated that the City has been reviewing the content of the template,which will be implemented at a later date, though the City did not specify a date of implementation. Subsequent to the inspection, the EPA Inspection Team reviewed the draft template and noted that the template does not indicate whether plans have been reviewed to evaluate the adequacy of proposed post-construction controls BMPs

2.3.4. The City had not conducted inspections of post-construction BMPs or developed and implemented a system for monitoring post-construction BMPs to ensure proper operation and maintenance. The Protocol for the Post-Construction MCM states that "some of the structural BMPs will require maintenance over time to be effective. You [the City] must have a system to monitor these BMPs." The Protocol for the Municipal Operations and Maintenance MCM further states that "all municipally-owned facilities [such as detention and retention basins and other BMPs] will be inspected at least annually during the remainder of the permit term (years 3, 4, and 5) to ensure they are meeting design criteria and are properly maintained and functional. By the end of year 2, you [the City] must have a detailed schedule for inspecting all stormwater facilities [municipally-owned and privately-owned components of the MS4], and for their operation and maintenance."

The EPA Inspection Team formally requested "Records of post-construction BMP and catch basin inspection and maintenance (March 10, 2009 to current)" (see Appendix B, Exhibit 1, Item No. 29), but the City did not provide the requested records. City staff stated that inspections of post-construction BMPs had not been conducted to ensure compliance with design criteria and ensure proper maintainced.

The City provided the EPA Inspection Team with a document titled *Pollution Prevention and Good Housekeeping Program for Municipal Operations and Maintenance* (hereafter, Pollution Prevention Program (see Appendix B, Exhibit 11), most recently revised in August 2010, which describes the frequency at which municipally owned post-construction BMPs should be inspected. The document states that though many City facilities are located in areas served by the combined sewer system rather than the MS4, "City owned stormwater facilities will be inspected annually to make sure they meet design criteria and are properly maintained and functional." This practice, however, had not yet been implemented by the City at the time of the inspection.

In addition, Article VII, *Maintenance Responsibilities,* Section 260-26, of the City's Stormwater Ordinance (see Appendix B, Exhibit 12) establishes the requirement for private landowners to "sign and record an operations and maintenance agreement with the City covering all stormwater control facilities, including BMPs, that are to be privately owned." Appendix B, Exhibit 13, is the City's template for operation and maintenance agreements for privately-owned facilities. The City's operation and maintenance agreements require the landowner to properly construct, operate, and

maintain post-construction BMPs and grant the City the right to enter private property to inspect BMPs and other facilities when necessary. Furthermore, Section 9 of the operations and maintenance agreement template states that "the City may inspect the facilities at a minimum of once every three years to ensure their continued functioning." The operations and maintenance agreement template does not include language requiring landowners to conduct and document inspections of post-construction BMPs at a specified frequency.

According to a review of several active operation and maintenance agreements between the City and private landowners, the actual signed and recorded agreements are based on the City's template but may also include additional requirements, such as regular inspections of post-construction BMPs. For example, the operation and maintenance agreement for the Lowe's Development Site at 1801 Hempstead Road in Lancaster stipulates the following requirements of the landowner for its structural stormwater BMPs (see Appendix B, Exhibit 14):

- Inspection Frequency: "Minimum of four times annually and after major storm events."
- Submittal Requirements and Records Retention: "Inspections to include an assessment of the current condition, recommended service (routine, specific or non-routine) and suggested adjustments in frequency of inspection. Minimum records to include date of inspection or service was performed, detailed description of work, and before and after photographic documentation."

City staff explained that the City intends to develop a post-construction BMP inspection program during the current permit year. The City further stated that it intends to use its collection system staff to conduct and document inspections. The EPA Inspection team discussed with the City the importance of developing SOPs for tracking, conducting, and documenting post-construction BMP inspections and correspondence to ensure that private landowners are properly operating and maintaining post-construction BMPs. In addition, the EPA Inspection Team discussed with the City the importance of using recorded operation and maintenance agreements to request information and documentation from landowners regarding post-construction stormwater controls.

One resource that the City might want to consider for program development is a manual developed by the Center for Watershed Protection, *Managing Stormwater in Your Community: A Guide for Building an Effective Post-Construction Program* (EPA Publication No. 833-R-08-001). The manual and tools can be downloaded under the "Stormwater Management Publications" folder at http://www.cwp.org/documents.html.[2]

Section 2.4 Pollution Prevention and Good Housekeeping for Municipal Operations and Maintenance

Part A of the Permit requires the City to implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or

[2] The website requires a free registration to log in to download documents from the free download area.

reducing pollutant runoff from municipal operations. The City is to include employee training to prevent and reduce stormwater pollution from activities such as park and open space maintenance, new construction and land disturbances, and stormwater system maintenance.

The following are the summary components of the Pollution Prevention and Good Housekeeping for Municipal Operations and Maintenance MCM (Municipal Operations and Maintenance MCM) from the Protocol:

- Comprehensive Pollution Prevention Program for municipal operations, focusing particularly on vehicle maintenance, fueling and washing, maintenance of stormwater facilities and employee training.
- Operation and Maintenance (O&M) Program training program for municipal employees.

2.4.1. Municipal operations and maintenance site visits. On September 2, 2010, the EPA Inspection Team conducted site visits at several municipally-owned operation and maintenance facilities within the jurisdictional boundaries of the City. The purpose of the site visits was to document the overall implementation of the City's Pollution Prevention and Good Housekeeping Program for municipal operations. Summary observations pertaining to the site visit to the City's Streets Department Building are presented below. All referenced photographs are contained in Appendix C, Photograph Log.

Streets Department Building Facility – 750 Fairview Avenue, Lancaster, PA 17603
The Streets Department Building Facility is about 200 feet northwest of the Conestoga River and adjacent to a PPL Electric Utilities facility. The Streets Department Building Facility comprises several buildings and outdoor storage areas. The main building primarily houses equipment and maintenance areas for the City's Department of Public Works' Streets Department. Various activities are conducted at the facility, including the following: vehicle washing, storage and repair, street sweeper washing and waste storage, and the storage of cold patch material, salt, and collected leaves. According to City staff, the main building at the facility was constructed more than 100 years ago and most drain inlets on-site discharge to the City's combined sewer system, although several inlets near the main building discharge to the MS4. Numerous examples of poor pollution prevention and housekeeping practices were observed in other areas of the site. The EPA Inspection Team observed the following with regard to pollution prevention and good housekeeping at the facility:

- Complete containment was not provided for the street sweeper tailing piles in the southern portion of the facility (see Appendix C, Photographs 31 and 32).
- Several leaks and spills of oily substances were observed beneath and adjacent to two dump trucks stored near the sweeper tailings storage area in the southern portion of the facility (see Appendix C, Photographs 33, 34 and 35). Drip pans had not been implemented, and no evidence of absorbent materials used to clean up the leaks was observed.
- Numerous materials were stored without cover or containment in the area used by the Signs Department for storage in the southern portion of the site (see Appendix C, Photograph 36). For example, batteries were stored on the ground surface (see

Appendix C, Photographs 37 and 38), paint cans with residual material inside them were stored without covers (see Appendix C, Photographs 39 and 40), and a plastic container of an oily substance was stored on the ground surface without a proper cap (see Appendix C, Photograph 41).

- The salt storage shed in the southwestern portion of the facility did not provide full overhead coverage for salt stored on-site and salt residue was observed on the adjacent impervious ground surface (see Appendix C, Photographs 42 through 45).
- Two waste oil tanks without cover or containment were located in an area outside of the main building and directly adjacent to a drain inlet that is connected to the combined sewer system (see Appendix C, Photograph 46). According to City staff, the oil tanks are not double-walled and the City plans to replace the tanks. The EPA Inspection Team observed that the tanks were leaking at the time of the inspection.
- Nine 55-gallon drums of various petroleum-based products were stored without secondary containment adjacent to a trough drain in the rear of the main building (see Appendix C, Photographs 47 and 48). According to City staff, the trough drain flows to the combined sewer system.
- Several drain holes were observed in the floor of the weld shop building (see Appendix C, Photographs 49 and 50) and the basement of the main building (see Appendix C, Photographs 51, 52 and 53). City staff explained that they had conducted dye testing at the facility in 2003 to determine the discharge location of drains at the facility; however, at the time of the inspection they were unsure of the discharge location of these particular drain holes. The City did not have schematics that displayed the conveyances at the facility and their ultimate discharge location. Subsequent to the inspection, the City notified the EPA Inspection Team that additional dye testing at the facility was conducted and determined that the drain holes in the weld shop building are not connected to the sanitary sewer, combined sewer, or MS4, but rather drain to a crawl space below the main floor of the building. With regard to the drain holes observed in the basement of the main building, the City provided the following additional information to the EPA Inspection Team via email dated September 23, 2010:

  > On the basement of the Streets building, we tried to dye the drain identified during the inspection and found it to be clogged. Our crew later went back and dyed another drain in the basement and found it to be connected to the CSO outfall tunnel after the weir which goes straight to the river. We then dyed the 1st floor and found the same to be true, those holes discharge to the CSO tunnel after the weir. We also then tested the stormwater inlet that's located between the Streets Building/Weld Shop and collects from that area and runoff from the street sweeping/leaf storage area. This was found to connect to the sanitary sewer system.
  >
  > On the illegal connection of the 1st and 2nd floor drains in the Streets Building, we've notified the City personnel in-charge of the facility that these to be disconnect from the CSO overflow tunnel and connected to the sanitary system. We haven't located any drawings of the building @ City Hall, but our crews are coming up with alternatives for making the correction.

- The City did not maintain a spill kit at the facility.

2.4.2. The City had not fully implemented its vehicle operation and maintenance program as required by the Protocol. The Protocol for the Municipal Operations and Maintenance MCM requires that the City develop a vehicle operation and maintenance program during Permit Year 2 of the Permit term and implement the program in Permit Year 3 and beyond. According to the Protocol for Municipal Operations and Maintenance MCM, the program should include policies and practices to ensure pollution prevention from at least vehicle fueling, maintenance, and washing operations.

The EPA Inspection Team formally requested a "Written description of Vehicle Operations and Maintenance Program" (see Appendix B, Exhibit 1, Item No. 31). In response, the City provided its Pollution Prevention Program, most recently revised in August 2010 (see Appendix B, Exhibit 11). The document includes specific requirements for vehicle maintenance, fueling, and washing to be implemented at City facilities.

During the inspection, the EPA Inspection Team noted several issues with regard to vehicle maintenance activities at the Streets Department Building facility that were not consistent with the City's Pollution Prevention Program. For example, the City's Pollution Prevention Program specifies that leaking equipment should be stored indoors until repairs can be made; however (as also noted in section 2.4.1. herein), the EPA Inspection Team observed evidence of leaking vehicles stored outside on impervious surfaces at the Streets Department Building (see Appendix C, Photographs 33, 34 and 35).

In addition, the City's Pollution Prevention Program states that the City must "confirm inside garage floor drains do not connect to stormwater facilities, but instead the sanitary sewer system". However, at the time of the inspection, the City was unsure of the discharge location of several floor drains inside the weld shop building and the basement of the main building at the Streets Maintenance Building facility (see Appendix C, Photographs 49 through 53). Furthermore, the City's Pollution Prevention Program states that the City should "make proper disposal of greasy rags, oil filters, batteries, spent coolant, degreasers, etc…". Despite this requirement, the EPA Inspection Team observed several batteries and waste products stored outdoors without cover or containment in the southern portion of the Streets Department Building facility (see Appendix C, Photographs 36 through 41). See Section 2.4.1, Municipal Operations and Maintenance Site Visit, for additional details regarding the site visit to the City's Streets Department Building.

2.4.3. The City had not conducted basic awareness training for municipal employees regarding stormwater pollution prevention and management. The Protocol for the Municipal Operations and Maintenance MCM states that to meet this requirement the Permittee must "(1) conduct basic awareness training of your municipal employees regarding stormwater management [stormwater facility operation, maintenance, and inspection; and vehicle maintenance, fueling, and washing], and (2) ensure that your employees understand the new procedures developed in the O&M Program . . . . "

The EPA Inspection Team formally requested "Municipal employee training records and syllabus" (see Appendix B, Exhibit 1, Item No. 30), but the City did not provide the requested records. The City Wastewater Project Manager explained that specific stormwater awareness training had not been conducted for municipal employees and therefore they did not have corresponding records. During the inspection the EPA Inspection Team interviewed a City field maintenance worker and City Fire staff, who confirmed that they had not received stormwater awareness training.

2.4.4. The City had not conducted maintenance inspections or cleaning of catch basins in accordance with the Protocol. The Protocol for the Municipal Operations and Maintenance MCM states that beginning in Permit Year 3, the permittee must "*inspect each catch basin at least once annually* to determine if it needs cleaning and note any repair needs. If the depth of deposits is greater than or equal to one-third the depth from the basin bottom to the invert of the lowest pipe or opening into or out of the basin (EPA, 1999), have the catch basin cleaned as soon as possible. *Inspect catch basins in which debris significantly exceeds the one-third depth standard twice annually*." The Protocol for the Municipal Operations and Maintenance MCM further requires "Years 4-5: Continue Implementation of P2 Policies and Practices for the O&M Program."

The EPA Inspection Team formally requested "Records of post-construction BMP and catch basin inspection and maintenance (March 10, 2009 to current)" (see Appendix B, Exhibit 1, Item No. 29), but the City did not provide the requested records. City collection system staff explained that the City does not maintain concise records of operation and maintenance or pollution prevention activities conducted in the MS4 area. The City intends to implement a CMMS within the next year, which will be integrated with the City's GIS and could be used as a tool for ensuring documentation and tracking of operations and maintenance activities.

As described by City staff, catch basin cleaning is conducted in a reactive fashion as time and resources allow, and the City does not have a formal schedule for its MS4 catch basin cleaning efforts. In addition, the City does not have written SOPs for the criteria used to judge when a catch basin needs to be cleaned; however, staff explained that a catch basin requires cleaning if it is not draining properly or if, in the combined system, water is not visible in the catch basin.

As noted in Section 2.1.1 herein, the City's overall coveyance system is approximately 55-percent combined and 45-percent separate, and the City's operation and maintenance field staff is responsible for conducting operation and maintenance activities in both the combined and separate systems.
Another issue noted by the EPA Inspection Team was that the drain inlets in the respective systems were not marked in the field to denote the ultimate discharge location of the inlets. Furthermore, the City's GIS-based Storm Drain System Map includes sewer line and inlet locations in the combined system and some sanitary sewer lines in the separate system; however, the map does not include the locations of storm sewer lines or drain inlets in the MS4.

Additional information about catch basin cleaning was explained by members of the City's operation and maintenance field staff: during such cleaning activities, City staff members record information regarding the activity conducted by making notes on a paper tablet (see Appendix B, Exhibit 15); however, the records do not denote which activities are performed in the respective systems (i.e., MS4 or combined). It appeared to the EPA Inspection Team that the City's Public Works administrative staff had a thorough working knowledge of which inlets are connected to the combined or separate sewer system, although field maintenance workers had only a general understanding of the respective system delineations.

Section 2.5 Additional Observations

2.5.1. Relationship with CCD and Enforcement of E&S Control Plan Requirements. As described in Section 2.2.3 and Section 2.2.4 herein, the City entered into an MOU with the CCD on March 9, 2010, which delineates the responsibilities of the CCD and the City, including those pertaining to E&S pollution control (see Appendix B, Exhibit 6). Under the provisions of the MOU, the CCD is required to perform certain tasks, including E&S control plan reviews and construction site inspections. The MOU clearly stipulates that the City must require evidence that E&S control plans have been reviewed by the CCD and that the applicable projects have been issued NPDES permits. The MOU, however, does not specify which entity (City or CCD) is responsible for enforcing the requirements of approved E&S control plans, the City's Stormwater Ordinance, and *Pennsylvania Code Title 25, Environmental Protection, Chapter 102, Erosion and Sediment Control*.

2.5.2. BMPs for Small Construction Projects. The EPA Inspection Team learned that the City approves construction projects with the condition that developers agree to install post-construction BMPs (e.g., infiltration). As described by City staff, the City has been developing its Green Infrastructure Plan aimed at reducing stormwater flows into the combined sewer system, but the City has elected to apply this program to the MS4 areas of the City as well. As a component of the program, the City provides small construction project proponents with an informational packet regarding the reduction of stormwater runoff from construction activity (see Appendix B, Exhibit 16). As an example of the City's Green Infrastructure Plan, the EPA Inspection Team observed a completed addition to a commercial facility near the intersection of Steel Way and Manheim Pike in Lancaster. Although the project consisted of the installation of an impervious area adjacent to the main parking area at the facility, and it involved earth disturbance for the installation of the additional impervious area, the City required post-construction BMPs for stormwater volume reduction at the site. In response, the landowner elected to install BMPs for infiltration underneath the newly installed impervious area (see Appendix C, Photographs 54 and 55).

2.5.3. Stormwater Utility. According to the City's Director of Public Works, the City plans to develop a stormwater utility. City staff explained that this should promote increased stormwater awareness among residents and establish a dedicated funding source for the MS4 program.

Appendix A
Inspection Schedule

Tentative Agenda for MS4 Program Inspection of Lancaster, PA – September 1–2, 2010		
Day	**Time**	**Team 1**
Wednesday, September 1, 2010	8:00 am – 8:30 am	Kick-off Meeting & Program Management Overview
	8:30 am – 12:00 pm	Construction Site Runoff Control and Post-Construction Stormwater Management – Office Component
	12:00 pm – 1:00 pm	Lunch Break
	1:00 pm – 3:00 pm	Illicit Discharge Detection and Elimination (IDDE) – Office Component
	3:00 pm – 4:30 pm	Pollution Prevention and Good Housekeeping for Municipal Operations and Maintenance – Office Component
Thursday, September 2, 2010	8:00 am – 11:30 am	IDDE and Pollution Prevention and Good Housekeeping for Municipal Operations and Maintenance – Field Component
	11:30 am – 12:30 pm	Lunch Break
	12:30 pm – 3:00 pm	Construction/Post-Construction Stormwater Management – Field Component
	3:00 pm – 3:30 pm	Internal Discussion[1]
	3:30 pm – 4:30 pm	Closing Conference[2]

[1] Internal Discussion - Time for inspectors to arrange notes and prepare information to be discussed with the Municipality at the Closing Conference. Municipality participation is not expected.
[2] Closing Conference – Open to applicable Municipal representatives.